

## PATENT COOPERATION TREATY

PCT

## NOTIFICATION OF ELECTION

(PCT Rule 61.2)

From the INTERNATIONAL BUREAU

To:

Commissioner  
 US Department of Commerce  
 United States Patent and Trademark  
 Office, PCT  
 2011 South Clark Place Room  
 CP2/5C24  
 Arlington, VA 22202  
 ETATS-UNIS D'AMERIQUE  
 in its capacity as elected Office

<b>Date of mailing</b> (day/month/year) 07 June 2001 (07.06.01)	
<b>International application No.</b> PCT/EP00/09035	<b>Applicant's or agent's file reference</b> FB/BM45412
<b>International filing date</b> (day/month/year) 14 September 2000 (14.09.00)	<b>Priority date</b> (day/month/year) 14 September 1999 (14.09.99)
<b>Applicant</b> THONNARD, Joelle	

1. The designated Office is hereby notified of its election made:

☒ in the demand filed with the International Preliminary Examining Authority on:

11 April 2001 (11.04.01)

☐ in a notice effecting later election filed with the International Bureau on:2. The election ☒ was☐ was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

<b>The International Bureau of WIPO</b> 34, chemin des Colombettes 1211 Geneva 20, Switzerland Facsimile No.: (41-22) 740.14.35	<b>Authorized officer</b>  J. Leitao Telephone No.: (41-22) 338.83.38
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## PATENT COOPERATION TREATY

PCT

NOTIFICATION OF THE RECORDING  
OF A CHANGE(PCT Rule 92bis.1 and  
Administrative Instructions, Section 422)

From the INTERNATIONAL BUREAU

To:

PRIVETT, Kathryn, Louise  
SmithKline Beecham  
Corporate Intellectual Property  
(CN9.25.1)  
980 Great West Road  
Brentford  
Middlesex TW8 9GS  
ROYAUME-UNI

Date of mailing (day/month/year) 06 February 2002 (06.02.02)	<b>IMPORTANT NOTIFICATION</b>
Applicant's or agent's file reference FB/BM45412	
International application No. PCT/EP00/09035	International filing date (day/month/year) 14 September 2000 (14.09.00)

## 1. The following indications appeared on record concerning:

☐

the applicant

☐

the inventor

☒

the agent

☐

the common representative

## Name and Address

PRIVETT, Kathryn, Louise  
SmithKline Beecham  
Corporate Intellectual Property  
Two New Horizons Court  
Brentford  
Middlesex TW8 9EP  
United Kingdom

## State of Nationality

## State of Residence

## Telephone No.

+44 20 8975 2585

## Facsimile No.

+44 20 8975 6294

## Teleprinter No.

## 2. The International Bureau hereby notifies the applicant that the following change has been recorded concerning:

☐

the person

☐

the name

☒

the address

☐

the nationality

☐

the residence

## Name and Address

PRIVETT, Kathryn, Louise  
SmithKline Beecham  
Corporate Intellectual Property  
(CN9.25.1)  
980 Great West Road  
Brentford  
Middlesex TW8 9GS  
United Kingdom

## State of Nationality

## State of Residence

## Telephone No.

+44 20 8047 5000

## Facsimile No.

+44 20 8047 6894

## Teleprinter No.

## 3. Further observations, if necessary:

## 4. A copy of this notification has been sent to:

☒

the receiving Office

☐

the designated Offices concerned

☐

the International Searching Authority

☒

the elected Offices concerned

☐

the International Preliminary Examining Authority

☐

other:

The International Bureau of WIPO  
34, chemin des Colombettes  
1211 Geneva 20, Switzerland

Facsimile No.: (41-22) 740.14.35

## Authorized officer

Jean-Luc MARTIN

Telephone No.: (41-22) 338.83.38

# PATENT COOPERATION TREATY

PCT

## NOTICE INFORMING THE APPLICANT OF THE COMMUNICATION OF THE INTERNATIONAL APPLICATION TO THE DESIGNATED OFFICES

(PCT Rule 47.1(c), first sentence)

From the INTERNATIONAL BUREAU

ON DATABASE

To:  
PRIVETT, Kathryn, Louise  
SmithKline Beecham  
Two New Horizons Court  
Brentford  
Middlesex TW8 9EP  
ROYAUME-UNI

- 5 APR 2001

PCM

SOURCE M

RECEIVED

30 MAR 2001

NEW HORIZONS COURT

Date of mailing (day/month/year) 22 March 2001 (22.03.01)		IMPORTANT NOTICE	
Applicant's or agent's file reference FB/BM45412			
International application No. PCT/EP00/09035	International filing date (day/month/year) 14 September 2000 (14.09.00)	Priority date (day/month/year) 14 September 1999 (14.09.99)	
Applicant SMITHKLINE BEECHAM BIOLOGICALS S.A. et al			

1. Notice is hereby given that the International Bureau has communicated, as provided in Article 20, the international application to the following designated Offices on the date indicated above as the date of mailing of this Notice:  
AU,KP,KR,US

In accordance with Rule 47.1(c), third sentence, those Offices will accept the present Notice as conclusive evidence that the communication of the international application has duly taken place on the date of mailing indicated above and no copy of the international application is required to be furnished by the applicant to the designated Office(s).

2. The following designated Offices have waived the requirement for such a communication at this time:  
AE,AG,AL,AM,AP,AT,AZ,BA,BB,BG,BR,BY,BZ,CA,CH,CN,CR,CU,CZ,DE,DK,DM,DZ,EA,EE,EP,ES,  
FI,GB,GD,GE,GH,GM,HR,HU,ID,IL,IN,IS,JP,KE,KG,KZ,LC,LK,LR,LS,LT,LU,LV,MA,MD,MG,MK,  
MN,MW,MX,MZ,NO,NZ,OA,PL,PT,RO,RU,SD,SE,SG,SI,SK,SL,TJ,TM,TR,TT,TZ,UA,UG,UZ,VN,YU,  
The communication will be made to those Offices only upon their request. Furthermore, those Offices do not require the applicant to furnish a copy of the international application (Rule 49.1(a-bis)).
3. Enclosed with this Notice is a copy of the international application as published by the International Bureau on  
22 March 2001 (22.03.01) under No. WO 01/19996

### REMINDER REGARDING CHAPTER II (Article 31(2)(a) and Rule 54.2)

If the applicant wishes to postpone entry into the national phase until 30 months (or later in some Offices) from the priority date, a demand for international preliminary examination must be filed with the competent International Preliminary Examining Authority before the expiration of 19 months from the priority date.

It is the applicant's sole responsibility to monitor the 19-month time limit.

Note that only an applicant who is a national or resident of a PCT Contracting State which is bound by Chapter II has the right to file a demand for international preliminary examination.

### REMINDER REGARDING ENTRY INTO THE NATIONAL PHASE (Article 22 or 39(1))

If the applicant wishes to proceed with the international application in the national phase, he must, within 20 months or 30 months, or later in some Offices, perform the acts referred to therein before each designated or elected Office.

For further important information on the time limits and acts to be performed for entering the national phase, see the Annex to Form PCT/IB/301 (Notification of Receipt of Record Copy) and Volume II of the PCT Applicant's Guide.

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland	Authorized officer  J. Zahra
Facsimile No. (41-22) 740.14.35	Telephone No. (41-22) 338.83.38

Continuation of Form PCT/IB/308

**NOTICE INFORMING THE APPLICANT OF THE COMMUNICATION OF  
THE INTERNATIONAL APPLICATION TO THE DESIGNATED OFFICES**

<b>Date of mailing (day/month/year)</b> 22 March 2001 (22.03.01)	<b>IMPORTANT NOTICE</b>
<b>Applicant's or agent's file reference</b> FB/BM45412	<b>International application No.</b> PCT/EP00/09035
<p>The applicant is hereby notified that, at the time of establishment of this Notice, the time limit under Rule 46.1 for making amendments under Article 19 has not yet expired and the International Bureau had received neither such amendments nor a declaration that the applicant does not wish to make amendments.</p>	

# PATENT COOPERATION TREATY

From the INTERNATIONAL SEARCHING AUTHORITY

# PCT

NOTIFICATION OF TRANSMITTAL OF  
THE INTERNATIONAL SEARCH REPORT  
OR THE DECLARATION

(PCT Rule 44.1)

To:  
SMITHKLINE BEECHAM PLC  
Attn. Privett, Kathryn Louise  
Two New Horizons Court  
Brentford  
Middlesex TW8 9EP  
UNITED KINGDOM

**RECEIVED**

29 JAN 2001

Date of mailing  
(day/month/year) 29/01/2001

Applicant's or agent's file reference

FB/BM45412

**NEW HORIZONS COURT**

**FOR FURTHER ACTION** See paragraphs 1 and 4 below

International application No.

PCT/EP 00/09035

International filing date  
(day/month/year)

14/09/2000

Applicant

SMITHKLINE BEECHAM BIOLOGICALS S.A.

1. ☒ The applicant is hereby notified that the International Search Report has been established and is transmitted herewith.

**Filing of amendments and statement under Article 19:**

The applicant is entitled, if he so wishes, to amend the claims of the International Application (see Rule 46):

**When?** The time limit for filing such amendments is normally 2 months from the date of transmittal of the International Search Report; however, for more details, see the notes on the accompanying sheet.

**Where?** Directly to the International Bureau of WIPO  
34, chemin des Colombettes  
1211 Geneva 20, Switzerland  
Facsimile No.: (41-22) 740.14.35

For more detailed instructions, see the notes on the accompanying sheet.

2. ☐ The applicant is hereby notified that no International Search Report will be established and that the declaration under Article 17(2)(a) to that effect is transmitted herewith.

3. ☐ With regard to the protest against payment of (an) additional fee(s) under Rule 40.2, the applicant is notified that:

☐ the protest together with the decision thereon has been transmitted to the International Bureau together with the applicant's request to forward the texts of both the protest and the decision thereon to the designated Offices.

☐ no decision has been made yet on the protest; the applicant will be notified as soon as a decision is made.

4. **Further action(s):** The applicant is reminded of the following:

Shortly after 18 months from the priority date, the international application will be published by the International Bureau. If the applicant wishes to avoid or postpone publication, a notice of withdrawal of the international application, or of the priority claim, must reach the International Bureau as provided in Rules 90bis.1 and 90bis.3, respectively, before the completion of the technical preparations for international publication.

Within 19 months from the priority date, a demand for international preliminary examination must be filed if the applicant wishes to postpone the entry into the national phase until 30 months from the priority date (in some Offices even later).

Within 20 months from the priority date, the applicant must perform the prescribed acts for entry into the national phase before all designated Offices which have not been elected in the demand or in a later election within 19 months from the priority date or could not be elected because they are not bound by Chapter II.

Name and mailing address of the International Searching Authority



European Patent Office, P.B. 5818 Patentlaan 2  
NL-2280 HV Rijswijk  
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,  
Fax: (+31-70) 340-3016

Authorized officer

Catherine Humbert

## TES TO FORM PCT/ISA/220

These Notes are intended to give the basic instructions concerning the filing of amendments under article 19. The Notes are based on the requirements of the Patent Cooperation Treaty, the Regulations and the Administrative Instructions under that Treaty. In case of discrepancy between these Notes and those requirements, the latter are applicable. For more detailed information, see also the PCT Applicant's Guide, a publication of WIPO.

In these Notes, "Article", "Rule", and "Section" refer to the provisions of the PCT, the PCT Regulations and the PCT Administrative Instructions respectively.

### INSTRUCTIONS CONCERNING AMENDMENTS UNDER ARTICLE 19

The applicant has, after having received the international search report, one opportunity to amend the claims of the international application. It should however be emphasized that, since all parts of the international application (claims, description and drawings) may be amended during the international preliminary examination procedure, there is usually no need to file amendments of the claims under Article 19 except where, e.g. the applicant wants the latter to be published for the purposes of provisional protection or has another reason for amending the claims before international publication. Furthermore, it should be emphasized that provisional protection is available in some States only.

#### What parts of the international application may be amended?

Under Article 19, only the claims may be amended.

During the international phase, the claims may also be amended (or further amended) under Article 34 before the International Preliminary Examining Authority. The description and drawings may only be amended under Article 34 before the International Examining Authority.

Upon entry into the national phase, all parts of the international application may be amended under Article 28 or, where applicable, Article 41.

#### When?

Within 2 months from the date of transmittal of the international search report or 16 months from the priority date, whichever time limit expires later. It should be noted, however, that the amendments will be considered as having been received on time if they are received by the International Bureau after the expiration of the applicable time limit but before the completion of the technical preparations for international publication (Rule 46.1).

#### Where not to file the amendments?

The amendments may only be filed with the International Bureau and not with the receiving Office or the International Searching Authority (Rule 46.2).

Where a demand for international preliminary examination has been/is filed, see below.

#### How?

Either by cancelling one or more entire claims, by adding one or more new claims or by amending the text of one or more of the claims as filed.

A replacement sheet must be submitted for each sheet of the claims which, on account of an amendment or amendments, differs from the sheet originally filed.

All the claims appearing on a replacement sheet must be numbered in Arabic numerals. Where a claim is cancelled, no renumbering of the other claims is required. In all cases where claims are renumbered, they must be renumbered consecutively (Administrative Instructions, Section 205(b)).

The amendments must be made in the language in which the international application is to be published.

#### What documents must/may accompany the amendments?

##### Letter (Section 205(b)):

The amendments must be submitted with a letter.

The letter will not be published with the international application and the amended claims. It should not be confused with the "Statement under Article 19(1)" (see below, under "Statement under Article 19(1)").

The letter must be in English or French, at the choice of the applicant. However, if the language of the international application is English, the letter must be in English; if the language of the international application is French, the letter must be in French.

The letter must indicate the differences between the claims as filed and the claims as amended. It must, in particular, indicate, in connection with each claim appearing in the international application (it being understood that identical indications concerning several claims may be grouped), whether

- (i) the claim is unchanged;
- (ii) the claim is cancelled;
- (iii) the claim is new;
- (iv) the claim replaces one or more claims as filed;
- (v) the claim is the result of the division of a claim as filed.

The following examples illustrate the manner in which amendments must be explained in the accompanying letter:

1. [Where originally there were 48 claims and after amendment of some claims there are 51]:  
"Claims 1 to 29, 31, 32, 34, 35, 37 to 48 replaced by amended claims bearing the same numbers; claims 30, 33 and 36 unchanged; new claims 49 to 51 added."
2. [Where originally there were 15 claims and after amendment of all claims there are 11]:  
"Claims 1 to 15 replaced by amended claims 1 to 11."
3. [Where originally there were 14 claims and the amendments consist in cancelling some claims and in adding new claims]:  
"Claims 1 to 6 and 14 unchanged; claims 7 to 13 cancelled; new claims 15, 16 and 17 added." or  
"Claims 7 to 13 cancelled; new claims 15, 16 and 17 added; all other claims unchanged."
4. [Where various kinds of amendments are made]:  
"Claims 1-10 unchanged; claims 11 to 13, 18 and 19 cancelled; claims 14, 15 and 16 replaced by amended claim 14; claim 17 subdivided into amended claims 15, 16 and 17; new claims 20 and 21 added."

**"Statement under article 19(1)" (Rule 46.4)**

The amendments may be accompanied by a statement explaining the amendments and indicating any impact that such amendments might have on the description and the drawings (which cannot be amended under Article 19(1)).

The statement will be published with the international application and the amended claims.

It must be in the language in which the international application is to be published.

It must be brief, not exceeding 500 words if in English or if translated into English.

It should not be confused with and does not replace the letter indicating the differences between the claims as filed and as amended. It must be filed on a separate sheet and must be identified as such by a heading, preferably by using the words "Statement under Article 19(1)."

It may not contain any disparaging comments on the international search report or the relevance of citations contained in that report. Reference to citations, relevant to a given claim, contained in the international search report may be made only in connection with an amendment of that claim.

**Consequence if a demand for international preliminary examination has already been filed**

If, at the time of filing any amendments under Article 19, a demand for international preliminary examination has already been submitted, the applicant must preferably, at the same time of filing the amendments with the International Bureau, also file a copy of such amendments with the International Preliminary Examining Authority (see Rule 62.2(a), first sentence).

**Consequence with regard to translation of the international application for entry into the national phase**

The applicant's attention is drawn to the fact that, where upon entry into the national phase, a translation of the claims as amended under Article 19 may have to be furnished to the designated/elected Offices, instead of, or in addition to, the translation of the claims as filed.

For further details on the requirements of each designated/elected Office, see Volume II of the PCT Applicant's Guide.

## PATENT COOPERATION TREATY

## PCT

## INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference <b>FB/BM45412</b>	<b>FOR FURTHER ACTION</b> see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.	
International application No. <b>PCT/EP 00/09035</b>	International filing date (day/month/year) <b>14/09/2000</b>	(Earliest) Priority Date (day/month/year) <b>14/09/1999</b>
Applicant  <b>SMITHKLINE BEECHAM BIOLOGICALS S.A.</b>		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 2 sheets.

☒ It is also accompanied by a copy of each prior art document cited in this report.

**1. Basis of the report**

- a. With regard to the **language**, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

- b. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international search was carried out on the basis of the sequence listing :

☒ contained in the international application in written form.

☒ filed together with the international application in computer readable form.

☐ furnished subsequently to this Authority in written form.

☐ furnished subsequently to this Authority in computer readable form.

☐ the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

☐ the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

2. ☐ **Certain claims were found unsearchable** (See Box I).

3. ☐ **Unity of invention is lacking** (see Box II).

**4. With regard to the title,**

☐ the text is approved as submitted by the applicant.

☒ the text has been established by this Authority to read as follows:

**MORAXELLA CATARRHALIS ANTIGEN, CORRESPONDING GENE AND USES THEREOF**

**5. With regard to the abstract,**

☒ the text is approved as submitted by the applicant.

☐ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

**6. The figure of the drawings to be published with the abstract is Figure No.**

☐ as suggested by the applicant.

☐ because the applicant failed to suggest a figure.

☐ because this figure better characterizes the invention.

☒ **None of the figures.**



## INTERNATIONAL SEARCH REPORT

International Application No.

T/EP 00/09035

## A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 C12N15/31 C12N15/62 C07K14/21 C07K16/12 A61K31/711  
A61K39/02 A61K39/40

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 C12N C07K A61K

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ, BIOSIS

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 5 712 118 A (MURPHY TIMOTHY F) 27 January 1998 (1998-01-27) column 1, line 13 - line 35 ---	1-26
A	WO 93 03761 A (UNIV TEXAS) 4 March 1993 (1993-03-04) abstract ---	1-26
A	WO 98 33814 A (VANDERMEID KARL R ;BARNIAK VICKI L (US); CHEN DEXIANG (US); AMERIC) 6 August 1998 (1998-08-06) page 2, line 29 -page 3, line 7 ---	1-26
A	WO 97 41731 A (ANTEX BIOLOG INC) 13 November 1997 (1997-11-13) page 5, paragraph 3 -----	1-26

☐ Further documents are listed in the continuation of box C.


Patent family members are listed in annex.

## \* Special categories of cited documents:

- \*A\* document defining the general state of the art which is not considered to be of particular relevance
- \*E\* earlier document but published on or after the international filing date
- \*L\* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- \*O\* document referring to an oral disclosure, use, exhibition or other means
- \*P\* document published prior to the international filing date but later than the priority date claimed

- \*T\* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- \*X\* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- \*Y\* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- \*G\* document member of the same patent family

Date of the actual completion of the international search

22 January 2001

Date of mailing of the international search report

29/01/2001

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2  
NL - 2280 HV Rijswijk  
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,  
Fax: (+31-70) 340-3016

Authorized officer

Mata Vicente, T.

## INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

T/EP 00/09035

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 5712118	A	27-01-1998	US 5556755 A	17-09-1996
			AU 701340 B	28-01-1999
			AU 7959394 A	18-04-1995
			CA 2172728 A	06-04-1995
			EP 0737085 A	16-10-1996
			FI 961407 A	21-05-1996
			JP 9503210 T	31-03-1997
			WO 9509025 A	06-04-1995
			US 5725862 A	10-03-1998
WO 9303761	A	04-03-1993	US 5552146 A	03-09-1996
			AT 140627 T	15-08-1996
			AU 666329 B	08-02-1996
			AU 2487892 A	16-03-1993
			CA 2115565 A	04-03-1993
			DE 69212495 D	29-08-1996
			DE 69212495 T	06-03-1997
			DK 612250 T	25-11-1996
			EP 0612250 A	31-08-1994
			ES 2092696 T	01-12-1996
			FI 940681 A	07-04-1994
			GR 3021423 T	31-01-1997
			JP 7501210 T	09-02-1995
			NO 940502 A	28-03-1994
			NO 2413 A	28-03-1994
			US 5759813 A	02-06-1998
			US 5599693 A	04-02-1997
			US 5981213 A	09-11-1999
WO 9833814	A	06-08-1998	AU 6139398 A	25-08-1998
			EP 1005487 A	07-06-2000
WO 9741731	A	13-11-1997	AU 723528 B	31-08-2000
			AU 3118097 A	26-11-1997
			BG 102983 A	31-05-2000
			BR 9711090 A	17-08-1999
			CZ 9803524 A	16-06-1999
			EP 0900025 A	10-03-1999
			NO 985113 A	28-12-1998
			PL 330935 A	07-06-1999
			SK 150998 A	07-05-1999

# PATENT COOPERATION TREATY

# PCT

REC'D 17 DEC 2001

## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

12


Applicant's or agent's file reference <b>MI/BM45412</b>	<b>FOR FURTHER ACTION</b> See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. <b>PCT/EP00/09035</b>	International filing date (day/month/year) <b>14/09/2000</b>	Priority date (day/month/year) <b>14/09/1999</b>
International Patent Classification (IPC) or national classification and IPC <b>C12N15/31</b>		
Applicant <b>SMITHKLINE BEECHAM BIOLOGICALS S.A. et al</b>		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 8 sheets, including this cover sheet.
  - ☒ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of 1 sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☒ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☒ Certain defects in the international application
- VIII ☒ Certain observations on the international application

Date of submission of the demand  <b>11/04/2001</b>	Date of completion of this report  <b>13.12.2001</b>
Name and mailing address of the international preliminary examining authority:   <b>European Patent Office</b> <b>D-80298 Munich</b> <b>Tel. +49 89 2399 - 0 Tx: 523656 epmu d</b> <b>Fax: +49 89 2399 - 4465</b>	Authorized officer  <b>Moonen, P</b>  Telephone No. <b>+49 89 2399 8538</b>



**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT**

International application No. PCT/EP00/09035

**I. Basis of the report**

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

**Description, pages:**

1-67 as originally filed

**Claims, No.:**

9-26 as originally filed

1-8 as received on 15/10/2001 with letter of 11/10/2001

**Drawings, sheets:**

1/13-13/13 as originally filed

**Sequence listing part of the description, pages:**

1-5, filed with the demand

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☒ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence

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listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description,            pages:
- ☐ the claims,                Nos.:
- ☐ the drawings,            sheets:

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

*(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)*

6. Additional observations, if necessary:

**III. Non-establishment of opinion with regard to novelty, inventive step and industrial applicability**

1. The questions whether the claimed invention appears to be novel, to involve an inventive step (to be non-obvious), or to be industrially applicable have not been examined in respect of:

- ☐ the entire international application.
- ☒ claims Nos. 19-26.

because:

- ☐ the said international application, or the said claims Nos. relate to the following subject matter which does not require an international preliminary examination (*specify*):
- ☐ the description, claims or drawings (*indicate particular elements below*) or said claims Nos. are so unclear that no meaningful opinion could be formed (*specify*):
- ☒ the claims, or said claims Nos. 19-26 are so inadequately supported by the description that no meaningful opinion could be formed.
- ☐ no international search report has been established for the said claims Nos. .

2. A meaningful international preliminary examination cannot be carried out due to the failure of the nucleotide and/or amino acid sequence listing to comply with the standard provided for in Annex C of the Administrative Instructions:

- ☐ the written form has not been furnished or does not comply with the standard.
- ☐ the computer readable form has not been furnished or does not comply with the standard.

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**V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability;  
citations and explanations supporting such statement**

**1. Statement**

Novelty (N)	Yes: Claims 3-6, 12-18
	No: Claims 1,2,7-11
Inventive step (IS)	Yes: Claims
	No: Claims 1-18
Industrial applicability (IA)	Yes: Claims 1-18
	No: Claims

**2. Citations and explanations  
see separate sheet**

**VII. Certain defects in the international application**

The following defects in the form or contents of the international application have been noted:  
**see separate sheet**

**VIII. Certain observations on the international application**

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:  
**see separate sheet**

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Reference is made to the following documents:

- D1:** US-A-5 712 118 (MURPHY TIMOTHY F) 27 January 1998 (1998-01-27)
- D2:** WO 93 03761 A (UNIV TEXAS) 4 March 1993 (1993-03-04)
- D3:** WO 98 33814 A (VANDERMEID KARL R ;BARNIAK VICKI L (US); CHEN DEXIANG (US); AMERIC) 6 August 1998 (1998-08-06)
- D4:** WO 97 41731 A (ANTEX BIOLOG INC) 13 November 1997 (1997-11-13)
- D5:** MURPHY T F: 'Branhamella catarrhalis: epidemiology, surface antigenic structure, and immune response' MICROBIOLOGICAL REVIEWS, vol. 60, no. 2, July 1996 (1996-07), pages 267-279 \*
- D6:** Can J Microbiol **45**(4) (April 1999) 299-303 \*
- D7:** J Infect Diseases **158** (1988) 761-5 \*
- D8:** NCBI locus AAA25462 (26 Apr 1993) \*

The documents D5-D8 were not cited in the international search report. A copy of D8 (not known to the Applicant) has been annexed to the first written opinion.

**Re Item V**

Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. **Introduction:** The present application refers to two closely related DNA sequences (SEQ ID NOs: 1 and 3 obtainable from *Moraxella* (*Branhamella*) *catarrhalis* and the recombinant polypeptide, designated as BASB109 (SEQ ID NOs:2 and 4), encoded by these DNA sequences. The recombinant purified polypeptide has a molecular weight (MW) in SDS-polyacrylamide gel electrophoresis of about 65 kDa (see Fig.3A of the specification); the MW of the native polypeptide has not been given in the description. Example 8 mentions that antisera from naturally infected individuals react to purified recombinant BASB109, but no data are further given (it cannot be concluded from this mentioning if the binding is specific, in particular in view of the sequence homology with e.g. *aniA* reductase as indicated below). All examples concerning diagnostic, prophylactic and therapeutic uses seriously lack sufficient technical details and data to establish an opinion with respect to e.g. the results obtained and a conclusion about the involvement of an inventive step and industrial applicability. An opinion

for **claims 19-26** is therefore not established

BASB109 is related to the major anaerobically induced outer membrane protein from *N. gonorrhoeae* (designated aniA; see D8, the sequence GELPVIDA.. starting at position 50 and at position 57 in Figure 2 of the application).

2. It appears that the DNA sequence was selected from a genomic mapping program of the pathogenic bacterial species *Moraxella catarrhalis* to develop genomics-based pharmaceuticals. The construction of a genomic map of *Moraxella catarrhalis* has already been disclosed in D6.

The prior art has referred to many antigenic polypeptides of *Moraxella catarrhalis* (see e.g. D1-D4 and D5; Tables 2 and 3); not all polypeptides have been characterised by their amino sequence, although a number of them have now been established e.g. by cloning/sequencing of the gene (like for a number of the outer membrane proteins, e.g. OPM-CD, OMP-E, OMP-F and OMP-B2=CopB). It is not clear from the present application if BASB109 is one of the characterised outer membrane proteins or is not yet characterised (see the figures of D7 and Table 1 concerning native polypeptides; recombinant BASB109 could be running in the gel at the same position as OMP C or D as a minor, isolated band ; moreover, the recombinant and native polypeptide could have different MWs). In the absence of a clear, limiting definition of "an isolated polypeptide" (see page 51 of the description; isolated is very broadly defined and therefore previous isolated fractions (e.g. centrifugation) of *Moraxella catarrhalis* will have comprised isolated BASB109) it is considered that D7 is prejudicial to the novelty of **claims 1 and 2** (Art.33(2) PCT).

**Claims 3-4 and 6** are considered to be novel over D7. The sequences derive in the present application from the *Moraxella catarrhalis* strain ATCC 43617. However, no special characteristic appears to be connected with this particular strain and the subject-matter of these claims is therefore obvious to the skilled person, contrary to the requirements of Art. 33(4) EPC.

It appears that the application makes available in an obvious way sequences of one the outer membrane proteins of *Moraxella catarrhalis*; the strain ATCC 43617 and the expressed polypeptides do not appear to have any special properties.



3. The prior art has also referred to the construction of an isolated genomic map of *Moraxella catarrhalis* (see **D6**) and to genotyping (see table of 2 of **D5**). It is at present considered that this prior art is **prejudicial to the novelty of at least present claims 7-11** (Art.33(2) PCT); the subject-matter of said claims is neither restricted to the sequence of a particular strain nor to the length of the polynucleotide (an isolated polynucleotide encoding ---).

The subject-matter of **claims 5 and 12-14** is novel. However, said claims are not considered to involve an inventive step, contrary to the requirements of the PCT (Article 33(3) PCT) in the absence of any special or unexpected characteristics.

The provision of the polynucleotide sequences of BASB109 is within the direct reach of the skilled person as one of the obvious things to do in the finding of genomics-based therapeutics (thus the closest prior art is considered to be the genomic mapping of *Moraxella catarrhalis*).

4. **Depending claims 15-18** further refer to additional features well known to the skilled person in relation to the subject-matter of the independent claims and therefore also lack an inventive step (Article 33(3) PCT).

#### **Re Item VII**

Certain defects in the international application

5. Contrary to the requirements of Rule 5.1(a)(ii) PCT, the relevant background art disclosed in the documents D5-D8 is not mentioned in the description, nor are these documents identified therein.

#### **Re Item VIII**

Certain observations on the international application

6. Figure 2 of the application concerns the alignment of the BASB109 polypeptides with the SEQ ID NOs:2 and 4; differences are said to be indicated by a gap. However, as both sequences are fully identical and no gap is indicated the figure appears to be superfluous, as well as the dual sequence identification (only SEQ ID NO:2 is sufficient).

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7. Page 63 of the description refers to a deposit (ATCC 43617), made in 1997 with an insert library. It is not clear if this deposit (the source of isolated DNA being a species of *Moraxella catarrhalis* isolated by Frosch and Kolle, as described in Antimicrob. Agent Chemother **21** (1982) 506-8) was publicly available at the priority date.

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**CLAIMS:**

1. An isolated polypeptide comprising an amino acid sequence which has at least 85% identity to the amino acid sequence selected from the group consisting of: SEQ ID NO:2 and SEQ ID NO:4, over the entire length of SEQ ID NO:2 or SEQ ID NO:4 respectively.
2. An isolated polypeptide as claimed in claim 1 in which the amino acid sequence has at least 95% identity to the amino acid sequence selected from the group consisting of: SEQ ID NO:2 and SEQ ID NO:4, over the entire length of SEQ ID NO:2 or SEQ ID NO:4 respectively.
3. The polypeptide as claimed in claim 1 comprising the amino acid sequence selected from the group consisting of: SEQ ID NO:2 and SEQ ID NO:4.
4. An isolated polypeptide of SEQ ID NO:2 or SEQ ID NO:4.
5. An immunogenic fragment of the polypeptide as claimed in any one of claims 1 to 4 (if necessary when coupled to a carrier) which is capable of raising an immune response which recognises the BASB109 polypeptide.
6. A polypeptide as claimed in any of claims 1 to 5 wherein said polypeptide is part of a larger fusion protein.
7. An isolated polynucleotide encoding a polypeptide as claimed in any of claims 1 to 6.
8. An isolated polynucleotide comprising a nucleotide sequence encoding a polypeptide that has at least 85% identity to the amino acid sequence of SEQ ID NO:2 or 4 over the entire length of SEQ ID NO:2 or 4 respectively; or a nucleotide sequence complementary to said isolated polynucleotide.

EPO - DG 1

15. 10. 2001